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ENVIRONMENTAL GOVERNANCE IN WATERSHEDS: THE IMPORTANCE OF COLLABORATION TO INSTITUTIONAL PERFORMANCE

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This paper summarizes the results of a study commissioned by the National Academy of Public Administration as part of its Learning from Innovations in Environmental Protection Project. Specifically, this study evaluated the development and implementation of six watershed management efforts located in the Delaware Inland Bays (DE), Narragansett Bay (RI, MA), Salt Ponds (RI), Lake Tahoe (CA, NV), Tampa Bay (FL), and Tillamook Bay (OR) watersheds. Each watershed differed in terms of its particular physical environment, the nature and causes of problems, jurisdictional complexity, and their history of watershed management efforts. Each watershed also had a specific government program designed to "manage" the watershed:

- Delaware Inland Bays Estuary Program (DIBEP)
- Narragansett Bay Estuary Program (NBEP)
- Salt Ponds Special Area Management Plan (SAMP)
- Tahoe Regional Planning Agency (TRPA)
- Tampa Bay Estuary Program (TBEP)
- Tillamook Bay National Estuary Program (TBNEP)

Four programs are part of the Environmental Protection Agency's (EPA's) National Estuary Program (i.e., Delaware Inland Bays, Narragansett Bay, Tampa Bay, and Tillamook Bay), one is a federal-state compact (i.e., Lake Tahoe), and one is a special area management Plan (SAMP) contained in a state's federally approved coastal zone management (CZM) program (i.e., Salt Ponds). Even though four of the programs are part of the NEP, there are some major differences in these efforts due to the nature of the problems, the mix of actors, the rules governing decision-making, and the policy tools and implementation structures used to improve environmental conditions.

Our analysis was guided by a perspective that differs somewhat from many researchers, practitioners, and EPA officials. The usual tendency is to assume that no watershed is "managed" without having some form of centralized watershed program that gives heavy emphasis to science and the preparation of detailed management plans using some sort of participatory planning process. Our view is that every watershed is currently "managed" in some way by a wide range of governmental and nongovernmental actors whose decisions influence the health and integrity of ecological systems. Watershed management

programs should therefore focus on getting this portfolio of actors and programs to work together more effectively. Therefore, they should focus on building, managing, and maintaining collaborative relationships necessary to facilitate the direct (e.g., restoration projects, or infrastructure investment) and indirect (e.g., public education, changes in decision making, or new research) actions needed to improve environmental conditions and enhance the governance of a watershed. Viewed from this perspective, watershed management is a form of intergovernmental management (IGM).

The unit of analysis was also broader than simply examining the development and implementation of the six watershed management programs. Instead, it reflects the inherently intergovernmental nature of complex environmental problems such as nonpoint source (NPS) and habitat loss and degradation by examining the individual and collective efforts of the pattern of federal, state, and local government programs that "manage" each watershed, which we term a watershed management effort. We examined the extent to which each watershed management program improved the capacity of this collection of actors to address environmental problems and whether they stimulated direct and indirect actions that offered some promise of environmental improvements or other forms of public value. The complexity of the governance arrangements and the implementation efforts in each watershed required preparing detailed case studies that focused on the:

- Nature of the ecological system and the problems confronting practitioners
- History of previous watershed planning efforts
- Institutional framework of programs that address problems due to NPS and habitat and loss and degradation
- Planning process used to develop the management plan or regulatory program
- Implementation structure used to oversee the program's implementation
- Progress made to improve the governance of the watershed

The watershed management efforts were then assessed using the following criteria developed by the Academy to identify the factors that influenced their effectiveness. Essentially, we evaluated whether the planning and implementation activities of the six watershed management programs led to improvements in environmental conditions, enhanced the governance of a watershed, or added public value in other ways. However, we were also interested in whether the watershed management programs served as a catalyst for other state and local government actions that provided public benefits.

Strategies for Achieving Environmental Improvements

The watershed management efforts utilized a variety of strategies to improve environmental conditions. All six watershed management efforts utilized some

form of participatory planning with varying degrees of success. The other dominant strategy was collaboration. The analysis revealed a wide range of collaborative activities at the operational, policy-making, and institutional level and many of the notable accomplishments of each watershed management effort were the direct result of this collaborative activity [Table 1]. The importance of participatory planning and collaboration is likely due to the inherently intergovernmental in nature of problems such as NPS and habitat loss and degradation. Numerous programs located at different levels of government address these problems. Accordingly, the participatory planning efforts often focused on developing a common understanding of environmental problems, formulating shared priorities and common policies, and identifying appropriate implementation actions. The planning efforts then served as the catalyst for a series of implementation activities that included direct and indirect actions. The activities were undertaken either by individual agencies or consisted of collaboration between different governmental and nongovernmental organizations.

Another dominant strategy was enhancing the capacity of state and local institutions and each program achieved some success in this area. Four efforts developed new collaborative organizations. The collaborative organizations undertook their own implementation activities, improved the capacity for collaboration, and monitored implementation activities. They also provided institutional infrastructure that future watershed efforts could build upon. For example, Delaware Inland Bays developed a new nonprofit organization, the Center for the Inland Bays (CIB). Lake Tahoe created the Tahoe Regional Planning Agency (TRPA) and planning and implementation activities were the catalyst for the development of other nongovernmental organizations (NGOs). Tampa Bay created an independent alliance of government agencies known as the Tampa Bay Estuary Program (TBEP). Tillamook Bay developed the Tillamook County Performance Partnership (TCPP). The Salt Ponds did not create a new collaborative organization. But rather, it developed a shared set of state and local zoning policies and helped develop capacity in state and local institutions. Narragansett Bay did not develop a collaborative organization but it did establish a new program in the state water quality agency that improved its capacity for planning, collaboration, and implementation.

Table 1: Different Types of Collaborative Activities

Type of Collaboration	DIB	NBEP	SAMP	TBEP	TBNEP	TRPA
Operational Level						
▪ Restoration projects/BMPs	X	X		X	X	X[a]
▪ Hiring staff to work in another actor's office					X	X
▪ Develop/distribute educational materials	X			X		
▪ Training of local officials					X	
▪ Scientific/Technical research/guidance	X	X		X	X	
▪ Actor collecting information for another actor	X		X	X	X	
▪ Participating in other collaborative processes		X		X	X	X
▪ Collaborating on joint grant proposals	X	X		X	X	
▪ One actor issues another's permits			X			X
▪ One actor helps enforce another's regulations			X			X
▪ Regulator and actor collaborate to achieve environmental improvements			X	X[a]		X
Policy-Making Level						
▪ Identify priority sites for restoration/BMPs			X	X		X
▪ Identify priority sites for infrastructure						
▪ Adopt shared goals				X	X	X
▪ Adopt shared policies			X	X		X
▪ Memorandums of Understanding (MOUs)			X		X	X
▪ Data collection/distribution (e.g., monitoring)				X	X[a]	
▪ Report on joint implementation activities	X			X	X[a]	X
▪ Create a forum to discus technical issues	X			X		X

Table 1: Different Types of Collaborative Activities

Type of Collaboration	DIB	NBEP	SAMP	TBEP	TBNEP	TRPA
▪ Collaborative permit review process			X			
▪ Frequent meetings to share information and coordinate activities	X			X	X	
Institutional/Capacity Building Level						
▪ Create nonprofit organization	X					
▪ Create intergovernmental organization				X	X	
▪ Create federal-state compact						X
▪ Develop shared regulations (e.g., zoning)			X			X
▪ Incorporating collective choice policies into other constitutional level rules		X	X	X		X

X = undertaken; X[a] = Planned;

Improving Environmental Conditions

Our analysis also examined the extent to which each watershed management effort improved environmental conditions or served as the catalyst for other direct and indirect activities that had some potential to improve environmental conditions or add public value. It proved difficult to make these determinations because of the absence of good data on environmental conditions and implementation activities. There were also methodological problems associated with linking changes in environmental conditions to specific programs or implementation activities. Therefore, much of the analysis focused on the activities that offered the potential for improving environmental conditions or adding other forms of public value. The analysis concluded that each watershed management effort experienced some notable accomplishments, which included direct and indirect activities that were regulatory and nonregulatory in nature [Table 2]. These activities included regulation, installation of best management practices (BMPs), habitat restoration and protection, planning, infrastructure investment, and scientific research. The particular pattern of activity varied based on the configuration of problems and institutions in each watershed. The analysis concluded that regulations helped to minimize and control future problems from NPS and habitat loss and degradation. But the power of

regulation to stimulate restoration activities was somewhat limited when environmental conditions had already deteriorated badly. This was one reason that the efforts relied on a wide range of non-regulatory activities such as investment in infrastructure (e.g., sewers, BMPs, etc.), habitat restoration, education, and planning (e.g., land use, water quality, water use, etc.).

Findings and Recommendations

Our analysis produced a set of findings that were loosely organized around the four basic stages of the planning process that had a prominent role in each watershed management effort. However, this should not imply that the watershed management efforts followed a linear sequential process. The planning activities were iterative in nature and implementation efforts often began well before a "plan" was completed. In some cases, participatory planning was even an implementation activity. In other cases, implementation activities were loosely related to the recommendations in a management plan, although the planning effort may have been the catalyst for the actions.

Problem Definition: The Ecology of Governance

The first group of findings concerned the definition of environmental problems. The physical and institutional environment in which a watershed management effort developed influenced the selection of issues, how problems were defined, and the collection of policy instruments for improving environmental conditions. The analysis also suggests that while it was important to understand how ecological systems function, it was equally important to understand "the ecology of governance". That is, the tradeoffs among environmental problems and how institutions that address these problems function and interact with one another. The strong influence that we found contextual factors to have on watershed management efforts suggests that implementation priorities should be set at the state and local level rather than by federal grant programs. It also led us to conclude that context matters a great deal and that contextual conditions and the ecology of a governance system had a strong influence on the development and implementation of each watershed management effort.

Characterizing Problems: "Nesting" Science and Agenda Setting

The second group of findings concerned efforts to characterize environmental problems in order to select management actions and the role that science and public participation played in these processes. We concluded that to be effective science must be "nested" in a decision-making process. Scientific research is of little use to decisionmakers if the information provided is not salient to decisionmakers. But we also found that scientific research will rarely tell decisionmakers what to do. Instead, scientific research provides information that helps to inform decisionmakers. Our analysis also revealed that better information on environmental conditions and implementation efforts was

needed. State and local officials also needed technical and financial assistance to improve data collection and integrate data management systems. The watershed management efforts also gave high importance to public participation, but the role of public and stakeholder involvement varied. Our analysis also concluded that it was important to develop a well-managed planning and decision-making process. We also identified several important differences between collaborative decision making and the type of rational, scientific analysis required by the Clean Water Act's (CWA) Total Maximum Daily Load (TMDL) requirements.

Table 2: Selected Accomplishments and Future Challenges of the Case Studies

Case Study	Accomplishments	Challenges
Delaware Inland Bays	▪ Hydrologic Unit Area (HUA) program ▪ Inland Bays Recovery Initiative	▪ Center for the Inland Bays (CIB) is still a relatively new organization
Bays	▪ Water Use Plan ▪ TMDL and tributary strategies ▪ $158 million in sewer infrastructure ▪ $13 million in land aquisition ▪ Restoration project at James Farm	▪ Agricultural nutrient loadings are still a major problem ▪ Revised compreensive plans in 1988 and 1997 but development continues ▪ CCMP is decreasing usefulness
Lake Tahoe	▪ Growth controls in the *Regional Plan* ▪ Devolution of permitting to local governments ▪ Joint lobying agenda with agencies and NGOs ▪ $900 Million Environmental Improvement Program ▪ Presidential Summit	▪ Unclear if funding for EIP will be obtained, particularly local government's share ▪ Unclear what is causing declining lake clarity

Table 2: Selected Accomplishments and Future Challenges of the Case Studies (cont.)

Case Study	Accomplishments	Challenges
Narragansett Bay	▪ Greenwich Bay Initiative ▪ Designation of state as "no-discharge zone" for recreational boating ▪ Improved planning capacity in RIDEM	▪ Collection of projects not a program ▪ State provides no implementation funding ▪ CCMP is no longer used or viable
Salt Ponds	▪ Shared zoning policies that balanced tradeoffs among sewers and OSDSs ▪ Local environmental ordinances ▪ Prevented development of undeveloped barrier beaches	▪ Lack of program to do habitat restoration ▪ Lack of collaboration with RIDEM
Tampa Bay	▪ Interlocal Agreement ▪ Nutrient Management Consortium ▪ Efforts to coordinate monitoring programs ▪ State land acquisition programs ▪ Stable implementation funding	▪ Lack of linkage with land use planning ▪ Need to address localized water quality problems ▪ Need to bring in other local government and instustry partners
Tillamook Bay	▪ Tillamook County Performance Partnership (TCPP) ▪ Funding for BMPs in state forests ▪ Development of the Tillamook Coastal Watershed Resource Center	▪ Limited financial resouces at the county level ▪ TCPP is developing as an organization ▪ Flooding events distract public attention and resources from other NPS problems

Implementation: An Exercise in Advanced Governance

The third group of findings examines implementation activities. We concluded that there was no substitute for a well-managed effort. Issues such as program leadership, staffing and recruitment, personnel management, budgeting, contracting, and grants management often emerged as factors that influenced the planning and implementation process. The administration of a watershed management effort proved to be a complex endeavor requiring a formidable set of professional skills to manage activities and coordinate intergovernmental relationships. In short, effective watershed management is an exercise in advanced governance. We also concluded that adequate resources (e.g., staff, money, etc.) and flexibility in spending influenced the effectiveness of implementation efforts by helping public officials plan and budget with confidence. It also allowed state and local priorities to drive watershed management efforts rather than priorities contained in federal grant programs.

In terms of implementation activities, demonstration projects were often used during the planning process to formulate policy and encourage the implementation of BMPs. Unfortunately, we found that demonstration projects were often used ineffectively. The analysis also concluded that there was a tendency for implementation activities to rely on individual projects that were often loosely connected or failed to systematically address problems. This appeared to be particularly true when there was heavy reliance on federal grant programs. In many cases, it was questionable whether these "random acts of environmental kindness" had much long-term potential to improve environmental conditions because they were often too limited in scope, duration, and number. Instead, the greatest improvements resulted from efforts to systematically address NPS problems in a targeted fashion. It was also clear that there were often unrealistic expectations about what could be accomplished by a watershed management effort given current funding levels, the pervasive nature of NPS problems, and existing institutional constraints such as the lack of flexibility and collaboration in existing federal NPS programs. It is important for policymakers, practitioners, and the public to recognize that many NPS problems are the result of the "tyranny of small decisions" and have developed incrementally over decades. It may take equally long periods of time to address them.

Evaluation: Importance of Performance Monitoring

The final set of findings concerned monitoring and evaluating the effectiveness of implementation efforts. We concluded that performance measures and tracking systems played an important role in encouraging a systematic-approach to addressing specific NPS problems (e.g., nutrient loadings from stormwater runoff). While it was important to have good monitoring data on environmental conditions, it was also important to have a system that monitors and integrates data on federal, state, and local implementation activities. The data on

implementation activities can help develop and reinforce peer-pressure systems that occur at the political, professional, and interpersonal level. We concluded that these peer pressure systems appeared to sustain commitments to collaborative activity and encouraged implementation efforts. We also concluded that it was important that watershed management effort developed shared definitions of problems, priorities, policies, and expectations for implementation activity. These social norms were an important component of the peer-pressure systems and provided additional incentives for action and created informal sanctions to enforce collaborative agreements.

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